

An important, much-needed update on a major food-borne pathogen of humans...

CAMPYLOBACTER JEJUNI

CURRENT STATUS AND FUTURE TRENDS

Edited by Irving Nachamkin, *University of Pennsylvania School of Medicine, Philadelphia*; Martin J. Blaser, *Vanderbilt University School of Medicine, Nashville, Tennessee*; and Lucy S. Tompkins, *Stanford University School of Medicine, Stanford, California*

During the past decade, *Campylobacter jejuni* has gained recognition as probably the most common cause of sporadic bacterial diarrheal illness in the United States and a pathogen of considerable importance worldwide. *Campylobacter* enteritis is essentially a food-borne disease, and the principal vehicle of infection is raw or undercooked meat, primarily poultry, although numerous other factors have been identified. Approximately 2.4 million cases of the disease are estimated to occur annually in the United States.

This book, the first major text on *Campylobacter* infections in over 8 years, summarizes the major advances in understanding the clinical disease and epidemiology of infection which have occurred in recent years. Scientists have begun to examine the biology and pathogenesis of *C. jejuni* infection, and new genetic approaches should enable significant progress in the near future.

Persons working in *Campylobacter* research, microbial pathogenesisists, clinical microbiologists, public health researchers, and infectious disease specialists will all find this a stimulating resource and an important update on the topic.

CONDENSED CONTENTS

Part I. Clinical and Epidemiologic Aspects (4 chapters by Skirrow and Blaser, Tauxe, Taylor, and Mishu *et al.*)

Part II. Reservoirs and Antimicrobial Resistance (5 chapters by Doyle and Jones, Stern, Norcross *et al.*, Tenover *et al.*, and Taylor)

Part III. Clinical Microbiology (3 chapters by Kaijser and Megraud, Goossens and Butzler, and Patton and Wachsmuth)

Part IV. Pathogenesis of *Campylobacter* Infections (9 chapters by Fox, Walker *et al.*, Russell, Ruiz-Palacios, Guerrant *et al.*, Fauchère *et al.*, Palacios *et al.*, Perez-Perez *et al.*, and Konkel *et al.*)

Part V. Immune Responses and Antigenic Analysis (6 chapters by Newell and Nachamkin, Black *et al.*, Nachamkin and Yang, Mills *et al.*, Blaser and Perez-Perez, and Pei *et al.*)

Part VI. Molecular Pathogenesis (4 chapters by Tompkins, Taylor, Guerry *et al.*, and Nuijten *et al.*)

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Bacteriological Code, 1990 Revision

Editors: S. P. Lapage, P. H. A. Sneath, E. F. Lessel, V. B. D. Skerman, H. P. R. Seeliger, and W. A. Clark; Editor for the 1992 Edition, P. H. A. Sneath

Published in 1992 by ASM for the International Union of Microbiological Societies (IUMS), the *Bacteriological Code, 1990 Revision*, is the only internationally recognized and approved reference book covering the rules and procedures for correct bacterial nomenclature. This new edition substantially updates the previous *Code*, published in 1975, by incorporating all subsequent additions and modifications which have occurred from 1976 through September 1990. Underlying this effort is the belief that progress in bacteriology is furthered by a precise and internationally recognized system of nomenclature.

The contents of this clear, concise volume are organized into several main sections: **General Considerations, Principles, Rules of Nomenclature with Recommendations, Advisory Notes, and Appendices.** Statutes of the International Committee on Systematic Bacteriology and of the Bacteriology and Applied Microbiology Division of IUMS, setting forth their mission and authority, are also summarized. Several useful indexes add to the excellent organization and accessibility of the work. Understanding of the complexities of the *Code* is further aided by two features: all nomenclatural terms are defined clearly when first used, and, wherever possible, actual examples from bacteriology have been included to illustrate rules.

Of interest to bacteriologists in general, microbiologists working in systematics, some biochemists and

molecular biologists, and taxonomists in particular, this reference is the best available resource for the scientist seeking to assess the correctness of names applied to defined bacterial taxa or to create and propose new names for formal approval. Here also is a summary of the history of the *Code* and lists of conserved and rejected names.

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A very timely examination of microbial processes that affect global climate

MICROBIAL PRODUCTION AND CONSUMPTION OF **GREENHOUSE GASES:** METHANE, NITROGEN OXIDES, AND HALOMETHANES

Edited by
John E. Rogers, *Environmental Protection Agency, Athens, Georgia*,
and
William B. Whitman, *University of Georgia, Athens*

Considered together, the impact of trace gases such as methane, nitrogen oxides, and halomethanes on global climate could equal that of carbon dioxide. Many of these less-publicized "greenhouse gases" are produced or metabolized by microorganisms.

This volume reviews current data on the relationship between microbial processes and the synthesis and degradation of methane, nitrogen oxides, and halomethanes in the environment. Major global sources of these gases, their atmospheric concentrations and isotopic compositions, and their production and consumption in terms of basic microbial processes in a variety of ecosystems are covered. Problems associated with scaling and model building as ways to identify significant global sources for microbially produced trace gases are also discussed.

This timely publication will greatly interest environmental and general microbiologists, earth and atmospheric scientists in general, and graduate students focusing in these areas.

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1. Introduction (*Rogers and Whitman*)
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9. Biogenic Sources of Methane (*Miller*)
10. Physiology of Nitrifying and Denitrifying Bacteria (*Robertson and Kuenen*)
11. Ecology of Nitrification and Denitrification in Soil Evaluated at Scales Relevant to Atmospheric Chemistry (*Groffman*)
12. Fluxes of Nitrous Oxide and Nitric Oxide from Terrestrial Ecosystems (*Davidson*)
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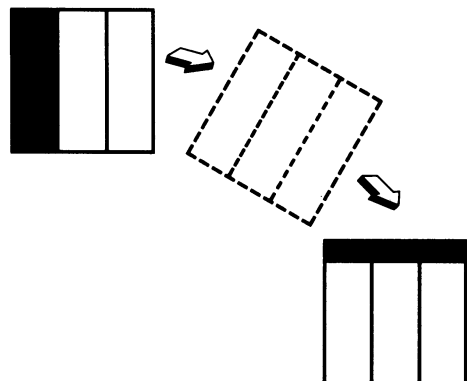
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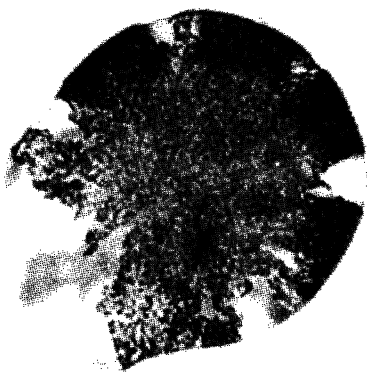
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Microbial Cell Surface Hydrophobicity

Edited by **R. J. Doyle**, *University of Louisville, Louisville, Ky.*, and **Mel Rosenberg**, *Tel Aviv University, Ramat Aviv, Israel*

Despite the voluminous journal literature on the hydrophobicity of microorganisms, its structural basis, and its role in microbial adhesion to surfaces, in differentiation, and in morphogenesis, this is the first book devoted to this subject. There has been a growing realization that hydrophobic interactions play a role in many, if not most, microbial adhesion phenomena, including microbial adhesion to soft host tissues, implants and prostheses, contact lenses, glass, oil, steel, teeth, submerged aquatic surfaces, plants, and fish.

This monograph covers in clear detail the hydrophobicities of fungi, especially *Candida* spp., and of staphylococci, streptococci, oral bacteria, soil and aquatic bacteria, the *Enterobacteriaceae*, and other Gram-negative bacteria. Each chapter is richly referenced, for those interested in delving further into a specific topic. The authors in this book were selected based on their substantial contributions to the field. Medical, applied, and environmental microbiologists; environmental, microbial, and petroleum engineers; infectious-disease physicians and researchers; and oral biologists will all benefit from this excellent summary and review.

CONTENTS

1. Microbial Cell Surface Hydrophobicity: History, Measurement, and Significance (*M. Rosenberg and Doyle*)
2. Nature of the Hydrophobic Effect (*Duncan-Hewitt*)
3. Microbial Hydrophobicity and Fermentation Technology (*Mozes and Rouchet*)
4. Role of Hydrophobic Interactions in Microbial Adhesion to Plastics Used in Medical Devices (*Klotz*)
5. Hydrophobicity of Proteins and Bacterial Fimbriae (*Irvin*)
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9. Cell Surface Hydrophobicity of Medically Important Fungi, especially *Candida* Species (*Hazen*)
10. Significance of Hydrophobicity in the Adhesiveness of Pathogenic Gram-Negative Bacteria (*Lachica*)
11. Hydrophobic Characteristics of Staphylococci (*Wadstrom*)
12. Relative Importance of Surface Free Energy as a Hydrophobicity Measure in Bacterial Adhesion to Solid Surfaces (*Busscher, Sjollem, and van der Mei*)
13. Hydrophobicity of Group A Streptococci and Its Relationship to Adhesion of Streptococci to Host Cells (*Courtney, Hasty, and Ofek*)
14. Hydrophobicity of Oral Bacteria (*Doyle, M. Rosenberg, and Drake*)

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Immunochemical Assays and Biosensor Technology for the 1990s

Edited by **Robert M. Nakamura**, *Scripps Clinic and Research Foundation and University of California, San Diego, School of Medicine, La Jolla*; **Yasushi Kasahara**, *Fujirebio, Inc., Tokyo, Japan*; and **Garry A. Rechnitz**, *University of Hawaii, Honolulu*

Immunochemical assays, fundamental measurement methods in biomedical research and analysis, have recently undergone revolutionary change and development deriving from innovations in the use of nonisotopic labels and in the marriage of biochemistry with electronics. By combining biochemical molecular recognition schemes with suitable transducers to achieve signal tests, researchers have developed more rapid, accurate, and efficient tests for the presence or concentration of desired analytes in biological specimens. Moreover, other assays in the developmental phase hold even greater promise for improved testing efficiency and for decentralization of these complex and sensitive laboratory procedures.

This volume summarizes the principles and applications of fundamental immunochemical assays, various assay formats, and the current state of the art in ultrasensitive and nonisotopic assays. It is intended primarily for anyone working with immunochemical assays who wants a comprehensive view of options now available as well as a glimpse at likely improvements which will occur in this decade. Students and practitioners of modern analytical techniques in immunology, clinical chemistry, diagnostic microbiology, serology, and medical technology will especially benefit.

CONTENTS

I. Concepts of Immunochemical Assays: 1. General Principles of Immunoassays (*Nakamura*); 2. Overview of Nonisotopic Immunoassay Labels (*Howanitz*); 3. Advantages and Disadvantages of Different Labels in Immunoassays (*Kricka*); 4. Advances in Design, Generation, and Manipulation of Monoclonal Antibodies (*McCormack et al.*); 5. Evaluation and Clinical Validation of Immunoassays (*Feldkamp*)

II. Nonisotopic Immunochemical Assays: 6. The Maturation of Light-Scattering Immunoassay (*Ritchie*); 7. Principles and Applications of Particle Immunoassay (*Kasahara*); 8. Heterogeneous Enzyme Immunoassays (*Nakamura and Kasahara*); 9. Homogeneous Enzyme Immunoassays (*Kasahara*); 10. Ultrasensitive Enzyme Immunoassay (*Ishikawa*); 11. Fluorescence Immunoassays (*Nakamura*); 12. Sensitive Enzyme Immunoassays with Chemiluminescent Detection (*Bronstein and Sparks*); 13. Time-Resolved Fluorescence Immunoassays: Principles and Applications (*Diamandis and Christopoulos*)

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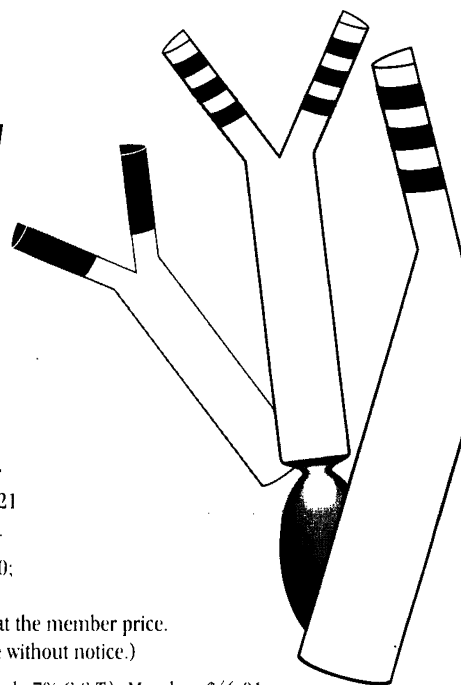
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A fascinating look at the variety of multicellular interactions of microbes...

Microbial Cell-Cell Interactions



Edited by **Martin Dworkin**, *University of Minnesota, Minneapolis*

This well-considered compilation of reviews and discussions has as one central theme that the historical concept of microbes as essentially unicellular organisms existing independently of other organisms is conceptually incomplete and misleading; instead, microbial systems manifest a variety of cell-cell interactions and a real understanding, not only of the role of the microbe in nature but also of the nature of the microbe itself, requires that researchers begin to think of microbes as interacting biochemically, genetically, and physiologically with each other. Thus considered, it becomes apparent that the variety of cell-cell interactions manifested by microbial systems represent excellent model systems for examining the mechanistic bases of the cell-cell interactions themselves, with application to the study of multicellular interactions in higher organisms.

The authors provide a representative sampling of the types of interactions among microbes, including mating interactions, involving the exchange of genetic information and including studies of exchanges of mating signals preceding mating; developmental interactions, with a close look at myxobacteria and cellular slime molds; ecological/colonization interactions, represented by discussions of coaggregation, especially in the oral ecosystem, and of bacterial luminescence in fish; and predator-prey interactions, including a look at the mechanisms involved in the *Bdellovibrio* developmental cycle that ultimately kills the host cell.

This book is directed toward any microbiologist, and the list is a long one, who must deal in a practical sense or in a research context with cell-cell interactions, as exemplified by examinations of mechanisms of pathogenesis, ecological interactions, mechanisms of mating, developmental biology, predator-prey interactions, plant-microbe interactions, and formation of mixed culture communities.

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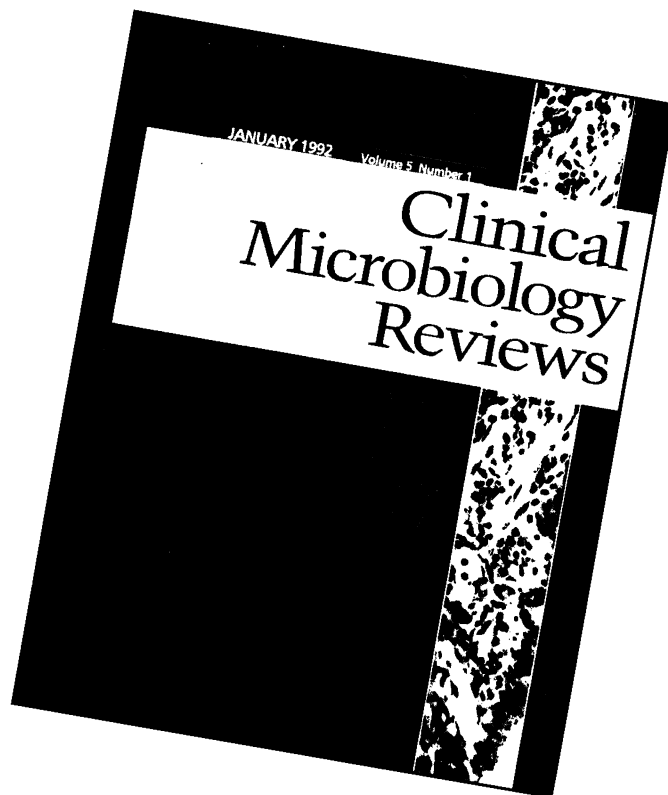
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